CLAIMS

1. (currently amended) A method for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

generating an index into a look-up table based on the input signal;

adjusting the index to compensate for changes in operating characteristics of the amplifier over time;

retrieving one or more pre-distortion parameters from the look-up table based on the adjusted index; and

pre-distorting the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier, wherein:

the index is adjusted based on a measure of distortion in the amplified output signal; and

the measure of distortion is based on a narrow-band power level in the amplified output signal.

2-3. (canceled)

4. (previously presented) The method of claim 1, further comprising amplifying the pre-distorted input signal with the amplifier to generate the amplified output signal.

5. (previously presented) The method of claim 4, wherein amplifying the pre-distorted input signal comprises controlling overall gain of the amplifier to compensate for the changes in the operating characteristics of the amplifier.

6. (previously presented) The method of claim 5, wherein the overall gain is controlled based on a comparison of power of the pre-distorted input signal and power of the amplified output signal.

7. (previously presented) The method of claim 5, wherein the overall gain is controlled to keep the overall gain substantially constant over time.

8. (previously presented) The method of claim 7, wherein the overall gain is further controlled to reduce distortion in the amplified output signal.

9. (previously presented) The method of claim 5, wherein the overall gain is controlled to reduce distortion in the amplified output signal.

10. (previously presented) The method of claim 5, wherein amplifying the pre-distorted input signal further comprises controlling bias applied to one or more amplifier stages of the amplifier.

11. (previously presented) The method of claim 10, wherein the bias is controlled based on a measure of distortion in the amplified output signal.

12. (previously presented) The method of claim 11, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

13. (previously presented) The method of claim 4, wherein amplifying the pre-distorted input signal comprises controlling bias applied to one or more amplifier stages of the amplifier.

14. (previously presented) The method of claim 13, wherein the bias is controlled based on a measure of distortion in the amplified output signal.

15. (previously presented) The method of claim 14, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

16. (previously presented) The method of claim 1, wherein the look-up table corresponds to frequency-independent pre-distortion processing.

17. (previously presented) The method of claim 1, wherein the look-up table corresponds to frequency-dependent pre-distortion processing.

18. (previously presented) The method of claim 1, further comprising:

retrieving one or more other pre-distortion parameters from a different look-up table based on the input signal; and

pre-distorting the input signal based on the one or more other pre-distortion parameters to generate a different pre-distortion component for the pre-distorted input signal, wherein the different look-up table is automatically updated by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the different look-up table.

19. (previously presented) The method of claim 1, wherein the look-up table is automatically updated by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the look-up table.

20. (previously presented) The method of claim 1, wherein the look-up table is generated during training of the amplifier and always kept fixed after training is complete.

21. (previously presented) The method of claim 1, wherein the index is based on power of the input signal.

22. (currently amended) Apparatus for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

an index generator adapted to generate an index into a look-up table based on the input signal;

an index adjuster adapted to adjust the index to compensate for changes in operating characteristics of the amplifier over time;

the look-up table adapted to provide one or more pre-distortion parameters based on the adjusted index; and

a pre-distorter adapted to pre-distort the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier<u>, wherein:</u>

<u>the index adjuster is adapted to adjust the index based on a measure of distortion in the amplified output signal; and</u>

the measure of distortion is based on a narrow-band power level in the amplified output signal.

23-24. (canceled)

25. (previously presented) The apparatus of claim 22, further comprising the amplifier adapted to amplify the pre-distorted input signal to generate the amplified output signal.

26. (previously presented) The apparatus of claim 25, wherein the amplifier is adapted to control overall gain of the amplifier to compensate for the changes in the operating characteristics of the amplifier.

27. (previously presented) The apparatus of claim 26, wherein the amplifier is adapted to control the overall gain based on a comparison of power of the pre-distorted input signal and power of the amplified output signal.

28. (previously presented) The apparatus of claim 26, wherein the amplifier is adapted to control the overall gain to keep the overall gain substantially constant over time.

29. (previously presented) The apparatus of claim 28, wherein the overall gain is further controlled to reduce distortion in the amplified output signal.

30. (previously presented) The apparatus of claim 26, wherein the overall gain is controlled to reduce distortion in the amplified output signal.

31. (previously presented) The apparatus of claim 26, wherein the amplifier is further adapted to control bias applied to one or more amplifier stages of the amplifier.

32. (previously presented) The apparatus of claim 31, wherein the amplifier is adapted to control the bias based on a measure of distortion in the amplified output signal.

33. (previously presented) The apparatus of claim 32, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

34. (previously presented) The apparatus of claim 25, wherein the amplifier is adapted to control bias applied to one or more amplifier stages of the amplifier.

35. (previously presented) The apparatus of claim 34, wherein the amplifier is adapted to control the bias based on a measure of distortion in the amplified output signal.

36. (previously presented) The apparatus of claim 35, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

37. (previously presented) The apparatus of claim 25, further comprising:

a first power detector adapted to detect power of the pre-distorted input signal;

a second power detector adapted to detect power of the amplified output signal;

a receiver adapted to detect narrow-band power of the amplified output signal at a selected frequency; and

a controller adapted to process the detected powers from the first and second power detectors and from the receiver to generate one or more control signals used to control operations within the apparatus.

38. (previously presented) The apparatus of claim 37, wherein the one or more control signals control the index adjuster, a variable attenuator in the amplifier, and bias levels applied to one or more amplifier stages in the amplifier.

39. (previously presented) The apparatus of claim 37, wherein the first and second power detectors are wide-band power detectors.

40. (previously presented) The apparatus of claim 37, wherein the controller is adapted to change the selection of the frequency of the receiver.

41. (previously presented) The apparatus of claim 22, wherein the look-up table corresponds to frequency-independent pre-distortion processing.

42. (previously presented) The apparatus of claim 22, wherein the look-up table corresponds to frequency-dependent pre-distortion processing.

43. (previously presented) The apparatus of claim 22, further comprising:

a different look-up table adapted to provide one or more other pre-distortion parameters based on the input signal, wherein the pre-distorter is further adapted to pre-distort the input signal based on the one or more other pre-distortion parameters to generate a different pre-distortion component for the pre-distorted input signal; and

a controller adapted to automatically update the different look-up table by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the different look-up table.

44. (previously presented) The apparatus of claim 22, further comprising a controller adapted to automatically update the look-up table by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the look-up table.

45. (previously presented) The apparatus of claim 22, wherein the look-up table is generated during training of the amplifier and always kept fixed after training is complete.

46. (previously presented) The apparatus of claim 22, wherein the index is based on power of the input signal.

47. (original) A method for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

retrieving one or more pre-distortion parameters from a look-up table based on the input signal; and

pre-distorting the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier, wherein the look-up table is automatically updated by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the look-up table.

48. (previously presented) The method of claim 47, wherein the measure is average power of the input signal.

49. (previously presented) The method of claim 47, wherein each algebraic equation is a piecewise linear curve.

50. (previously presented) The method of claim 47, wherein:

the measure is applied to four algebraic equations to generate four parameter values; and

the four parameter values are applied to two second-order polynomials to update two pre-distortion parameters in the look-up table.

51. (previously presented) The method of claim 47, wherein the pre-distortion parameters are frequency-dependent pre-distortion parameters.

52. (previously presented) The method of claim 47, wherein the pre-distortion parameters are frequency-independent pre-distortion parameters.

53. (previously presented) The method of claim 47, wherein the look-up table is updated at a specified periodic rate.

54. (previously presented) The method of claim 47, wherein the look-up table is updated based on a detected change in operating conditions of the amplifier.

55. (previously presented) The method of claim 54, wherein the detected change in the amplifier operating conditions corresponds to a change in a parameter value greater than a specified threshold value.

56. (previously presented) The method of claim 47, wherein the one or more parameter values are fine-tuned based on output spectrum of the amplifier.

57. (original) Apparatus for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

a look-up table adapted to provide one or more pre-distortion parameters based on the input signal;

a pre-distorter adapted to pre-distort the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier; and

a controller adapted to automatically update the look-up table by:

generating a measure based on current operations of the amplifier;

applying the measure to one or more algebraic equations to generate one or more parameter values; and

applying the one or more parameter values to one or more polynomials to update the look-up table.

58. (previously presented) The apparatus of claim 57, wherein:

the measure is average power of the input signal; and

further comprising an envelope detector adapted to detect current power of the input signal, wherein the controller uses the current input signal power to generate the average input signal power.

59. (previously presented) The apparatus of claim 57, wherein each algebraic equation is a piecewise linear curve.

60. (previously presented) The apparatus of claim 57, wherein:

the controller is adapted to apply the measure to four algebraic equations to generate four parameter values; and

the controller is adapted to apply the four parameter values to two second-order polynomials to update two pre-distortion parameters in the look-up table.

61. (previously presented) The apparatus of claim 57, wherein the pre-distortion parameters are frequency-dependent pre-distortion parameters.

62. (previously presented) The apparatus of claim 57, wherein the pre-distortion parameters are frequency-independent pre-distortion parameters.

63. (previously presented) The apparatus of claim 57, wherein the controller is adapted to update the look-up table at a specified periodic rate.

64. (previously presented) The apparatus of claim 57, wherein the controller is adapted to update the look-up table based on a detected change in operating conditions of the amplifier.

65. (previously presented) The apparatus of claim 64, wherein the detected change in the amplifier operating conditions corresponds to a change in a parameter value greater than a specified threshold value.

66. (previously presented) The apparatus of claim 57, wherein the controller is adapted to fine-tune the one or more parameter values based on output spectrum of the amplifier.

67. (new) A method for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

generating an index into a look-up table based on the input signal;

adjusting the index to compensate for changes in operating characteristics of the amplifier over time;

retrieving one or more pre-distortion parameters from the look-up table based on the adjusted index;

pre-distorting the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier; and

amplifying the pre-distorted input signal with the amplifier to generate the amplified output signal, wherein amplifying the pre-distorted input signal comprises controlling overall gain of the amplifier to compensate for the changes in the operating characteristics of the amplifier.

68. (new) The method of claim 67, wherein the overall gain is controlled based on a comparison of power of the pre-distorted input signal and power of the amplified output signal.

69. (new) The method of claim 67, wherein the overall gain is controlled to reduce distortion in the amplified output signal.

70. (new) The method of claim 67, wherein amplifying the pre-distorted input signal further comprises controlling bias applied to one or more amplifier stages of the amplifier.

71. (new) Apparatus for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

an index generator adapted to generate an index into a look-up table based on the input signal;

an index adjuster adapted to adjust the index to compensate for changes in operating characteristics of the amplifier over time;

the look-up table adapted to provide one or more pre-distortion parameters based on the adjusted index;

a pre-distorter adapted to pre-distort the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier; and

the amplifier adapted to amplify the pre-distorted input signal to generate the amplified output signal, wherein the amplifier is adapted to control overall gain of the amplifier to compensate for the changes in the operating characteristics of the amplifier.

72. (new) The apparatus of claim 71, wherein the amplifier is adapted to control the overall gain based on a comparison of power of the pre-distorted input signal and power of the amplified output signal.

73. (new) The apparatus of claim 71, wherein the overall gain is controlled to reduce distortion in the amplified output signal.

74. (new) The apparatus of claim 71, wherein the amplifier is further adapted to control bias applied to one or more amplifier stages of the amplifier.

75. (new) A method for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

generating an index into a look-up table based on the input signal;

adjusting the index to compensate for changes in operating characteristics of the amplifier over time;

retrieving one or more pre-distortion parameters from the look-up table based on the adjusted index;

pre-distorting the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier; and

amplifying the pre-distorted input signal with the amplifier to generate the amplified output signal, wherein amplifying the pre-distorted input signal comprises controlling bias applied to one or more amplifier stages of the amplifier.

76. (new) The method of claim 75, wherein the bias is controlled based on a measure of distortion in the amplified output signal.

77. (new) The method of claim 76, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

78. (new) Apparatus for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

an index generator adapted to generate an index into a look-up table based on the input signal;

an index adjuster adapted to adjust the index to compensate for changes in operating characteristics of the amplifier over time;

the look-up table adapted to provide one or more pre-distortion parameters based on the adjusted index;

a pre-distorter adapted to pre-distort the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier; and

the amplifier adapted to amplify the pre-distorted input signal to generate the amplified output signal, wherein the amplifier is adapted to control bias applied to one or more amplifier stages of the amplifier.

79. (new) The apparatus of claim 78, wherein the amplifier is adapted to control the bias based on a measure of distortion in the amplified output signal.

80. (new) The apparatus of claim 79, wherein the measure of distortion is based on a narrow-band power level in the amplified output signal.

81. (new) Apparatus for processing an input signal for application to an amplifier to generate an amplified output signal, comprising:

an index generator adapted to generate an index into a look-up table based on the input signal;

an index adjuster adapted to adjust the index to compensate for changes in operating characteristics of the amplifier over time;

the look-up table adapted to provide one or more pre-distortion parameters based on the adjusted index;

a pre-distorter adapted to pre-distort the input signal based on the one or more pre-distortion parameters to generate a pre-distorted input signal for application to the amplifier;

the amplifier adapted to amplify the pre-distorted input signal to generate the amplified output signal;

a first power detector adapted to detect power of the pre-distorted input signal;

a second power detector adapted to detect power of the amplified output signal;

a receiver adapted to detect narrow-band power of the amplified output signal at a selected frequency; and

a controller adapted to process the detected powers from the first and second power detectors and from the receiver to generate one or more control signals used to control operations within the apparatus.

82. (new) The apparatus of claim 81, wherein the one or more control signals control the index adjuster, a variable attenuator in the amplifier, and bias levels applied to one or more amplifier stages in the amplifier.

83. (new) The apparatus of claim 81, wherein the first and second power detectors are wide-band power detectors.

84. (new) The apparatus of claim 81, wherein the controller is adapted to change the selection of the frequency of the receiver.